Title: COMMUNICATING MULTI-PART MESSAGES BETWEEN CELLULAR DEVICES
USING A STANDARDIZED INTERFACE
Inventors: Alan W. Shen, David L.A. Anson, and Roman Sherman
Docket No.: 13768.218

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FIG. 1

Title: COMMUNICATING MULTI-PART MESSAGES BETWEEN CELLULAR DEVICES
USING A STANDARDIZED INTERFACE
Inventors: Alan W. Shen, David L.A. Anson, and Roman Sherman
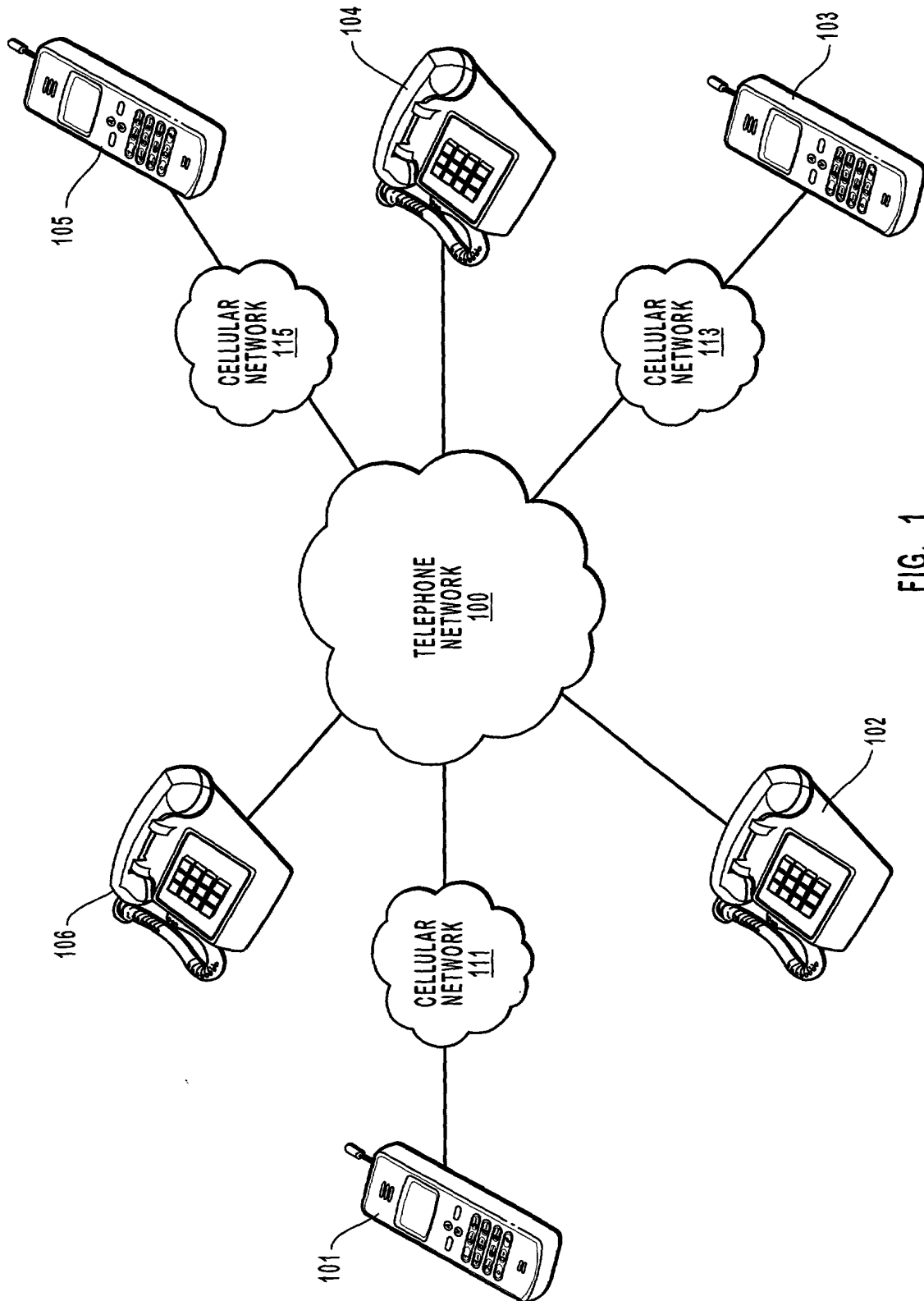Docket No.: 13768.218

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TELEPHONIC
DEVICE
101

PROCESSOR
211

BUS
210

MEMORY 212

OPERATING
SYSTEM
213

APPLICATION
PROGRAMS
214

PROGRAM
MODULES
215

PROGRAM
DATA
216

ANTENNA
209

OUTPUT
USER
INTERFACE
202

INPUT
USER
INTERFACE
203

SPEAKER
204

DISPLAY
205

NAVIGATION
CONTROLS
208

DIALING
CONTROLS
207

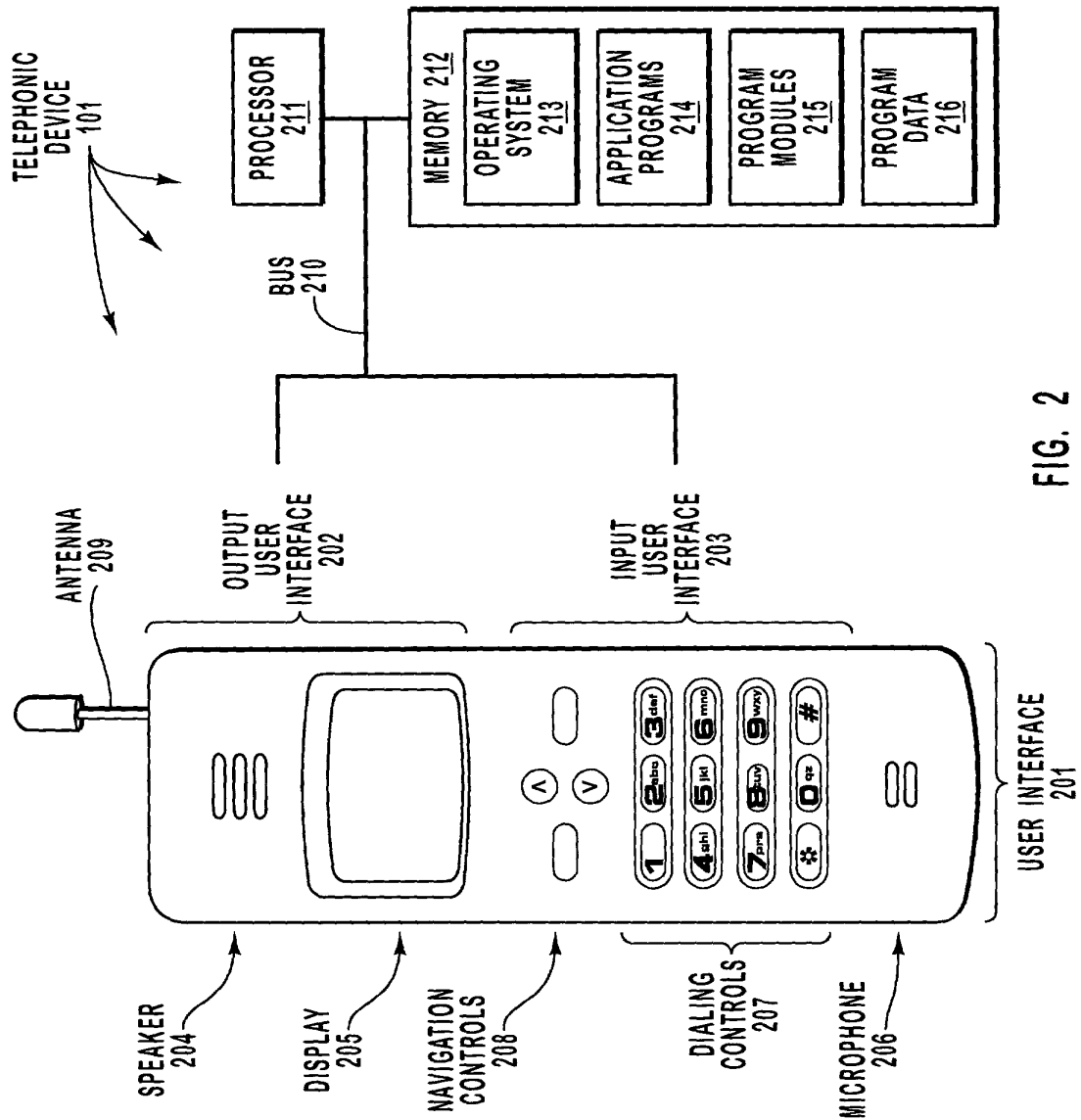MICROPHONE
206

USER INTERFACE
201

FIG. 2

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300

APPLICATION
301

INTERFACE
304

MESSAGES

SHORT MESSAGING
LAYER
302

SHORT MESSAGE FRAGMENTS

MESSAGES IF THEY ARE
SHORT ENOUGH

NETWORK DRIVER
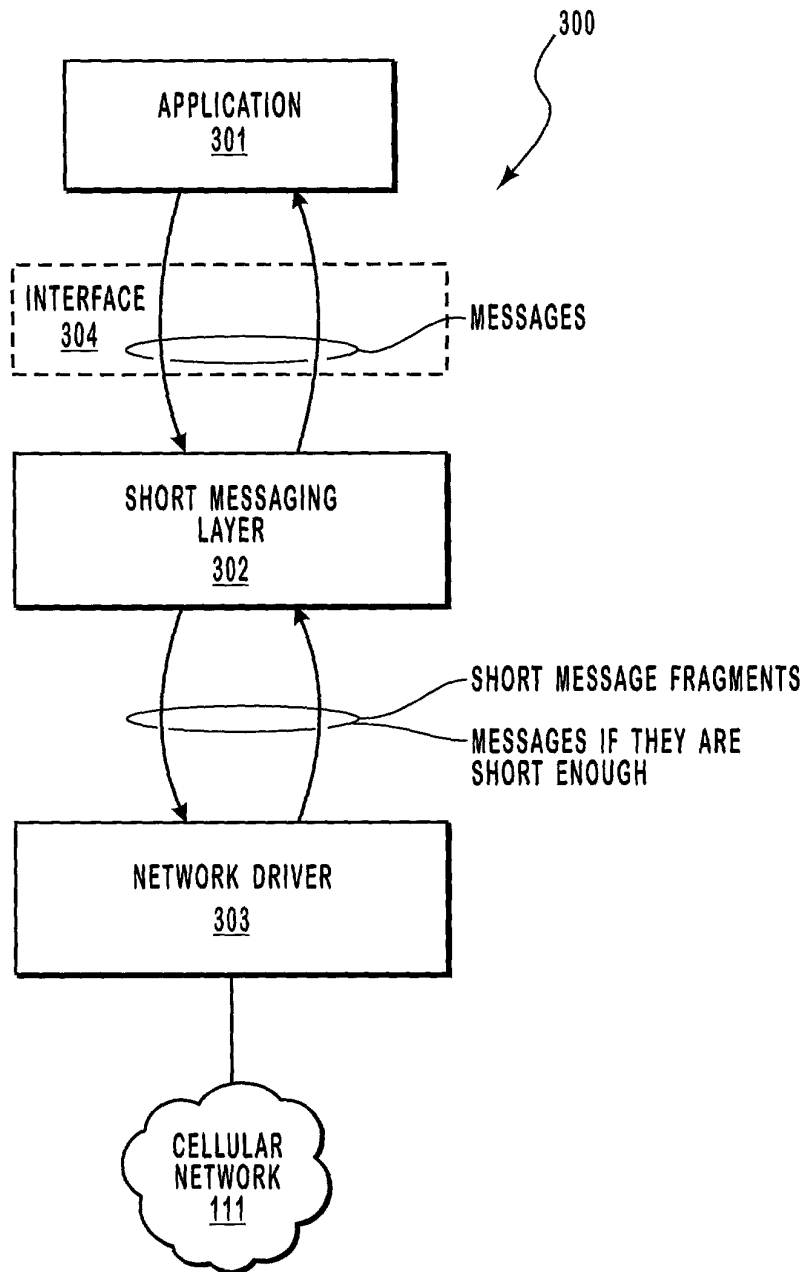303

CELLULAR
NETWORK
111

FIG. 3

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400

401 — RECEIVE FUNCTION CALL FROM CALLING
APPLICATION VIA STANDARDIZED INTERFACE
REQUESTING MESSAGE TRANSMISSION

TRANSMIT MESSAGE
OVER CELLULAR
NETWORK
402

DIVIDE MESSAGE INTO SHORT
MESSAGE FRAGMENTS OF A
LIMITED SIZE — 403

CAUSE EACH SHORT MESSAGE
FRAGMENT TO BE TRANSMITTED
OVER THE CELLULAR NETWORK — 404

405
REQUEST
FOR DELIVERY
REPORT
?

NO

YES

GATHER DELIVERY REPORTS
FROM CELLULAR NETWORK — 406

INTERPRET VARIOUS DELIVERY
REPORTS TO DETERMINE APPROPRIATE
DELIVER REPORT FOR MULTI-PART MESSAGE — 407

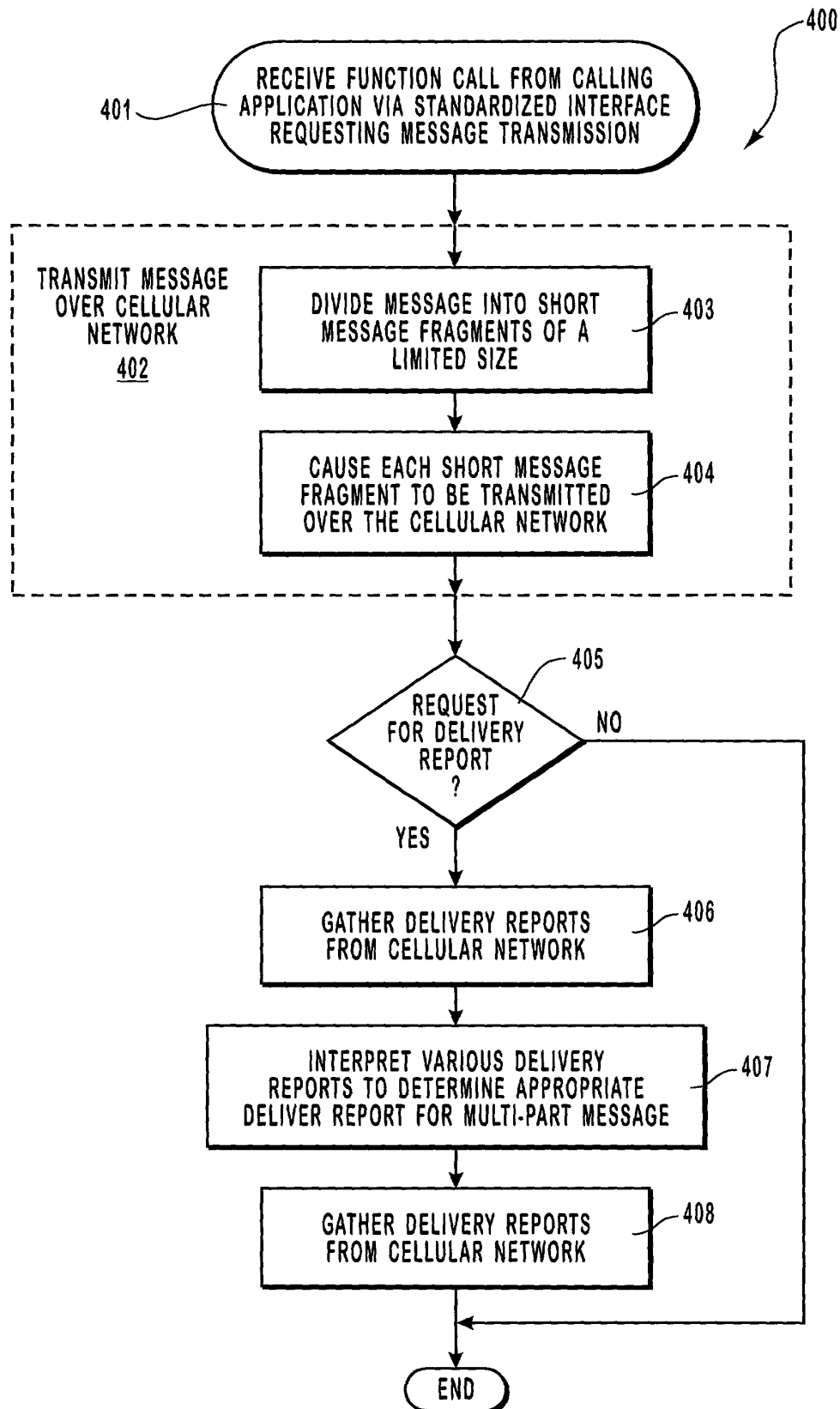GATHER DELIVERY REPORTS
FROM CELLULAR NETWORK — 408

END

FIG. 3

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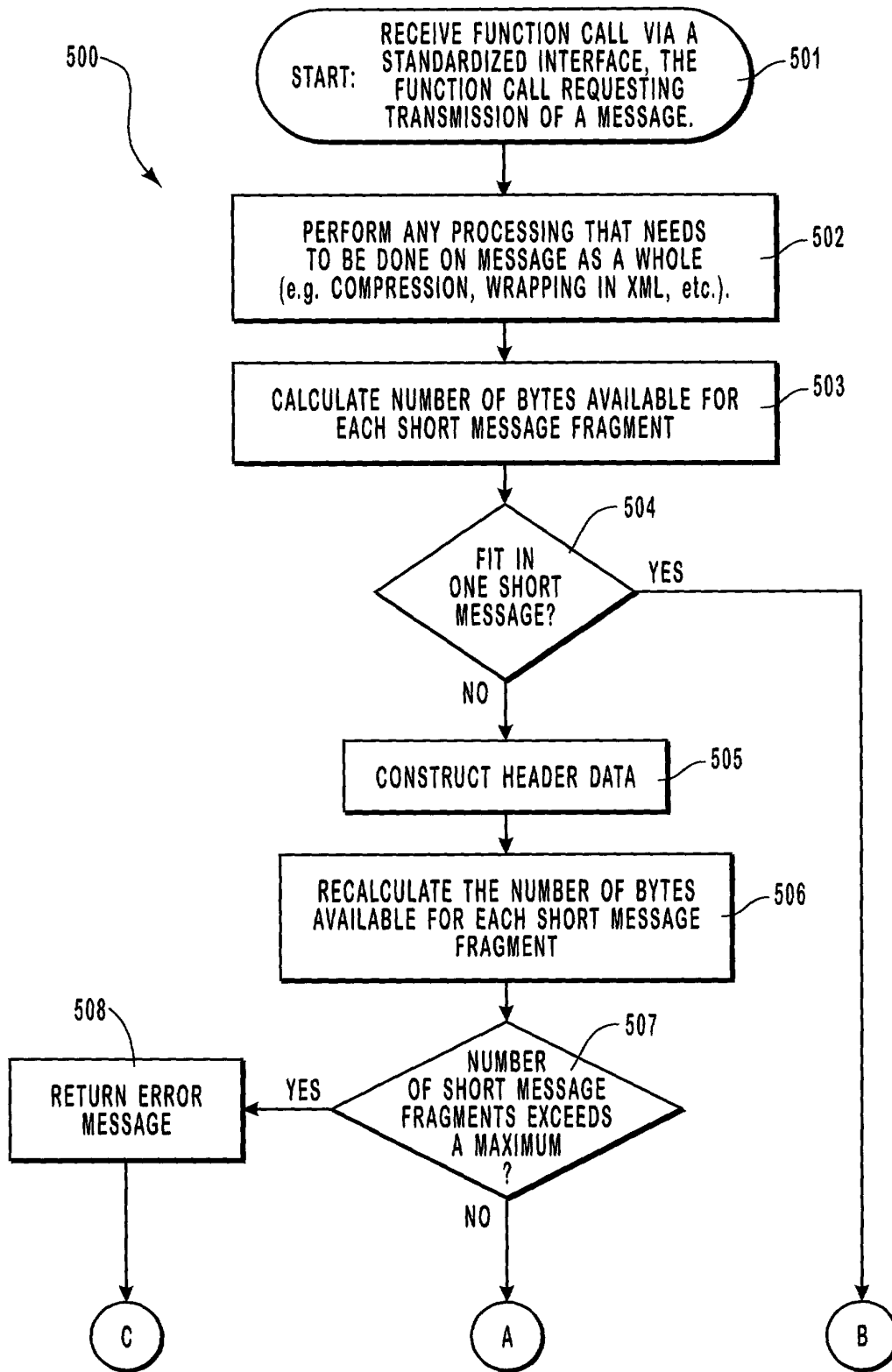Docket No.: 13768.218

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500

START: RECEIVE FUNCTION CALL VIA A STANDARDIZED INTERFACE, THE FUNCTION CALL REQUESTING TRANSMISSION OF A MESSAGE. — 501

PERFORM ANY PROCESSING THAT NEEDS TO BE DONE ON MESSAGE AS A WHOLE (e.g. COMPRESSION, WRAPPING IN XML, etc.). — 502

CALCULATE NUMBER OF BYTES AVAILABLE FOR EACH SHORT MESSAGE FRAGMENT — 503

504
FIT IN ONE SHORT MESSAGE?   YES

NO

CONSTRUCT HEADER DATA — 505

RECALCULATE THE NUMBER OF BYTES AVAILABLE FOR EACH SHORT MESSAGE FRAGMENT — 506

508
RETURN ERROR MESSAGE   YES   507 NUMBER OF SHORT MESSAGE FRAGMENTS EXCEEDS A MAXIMUM ?
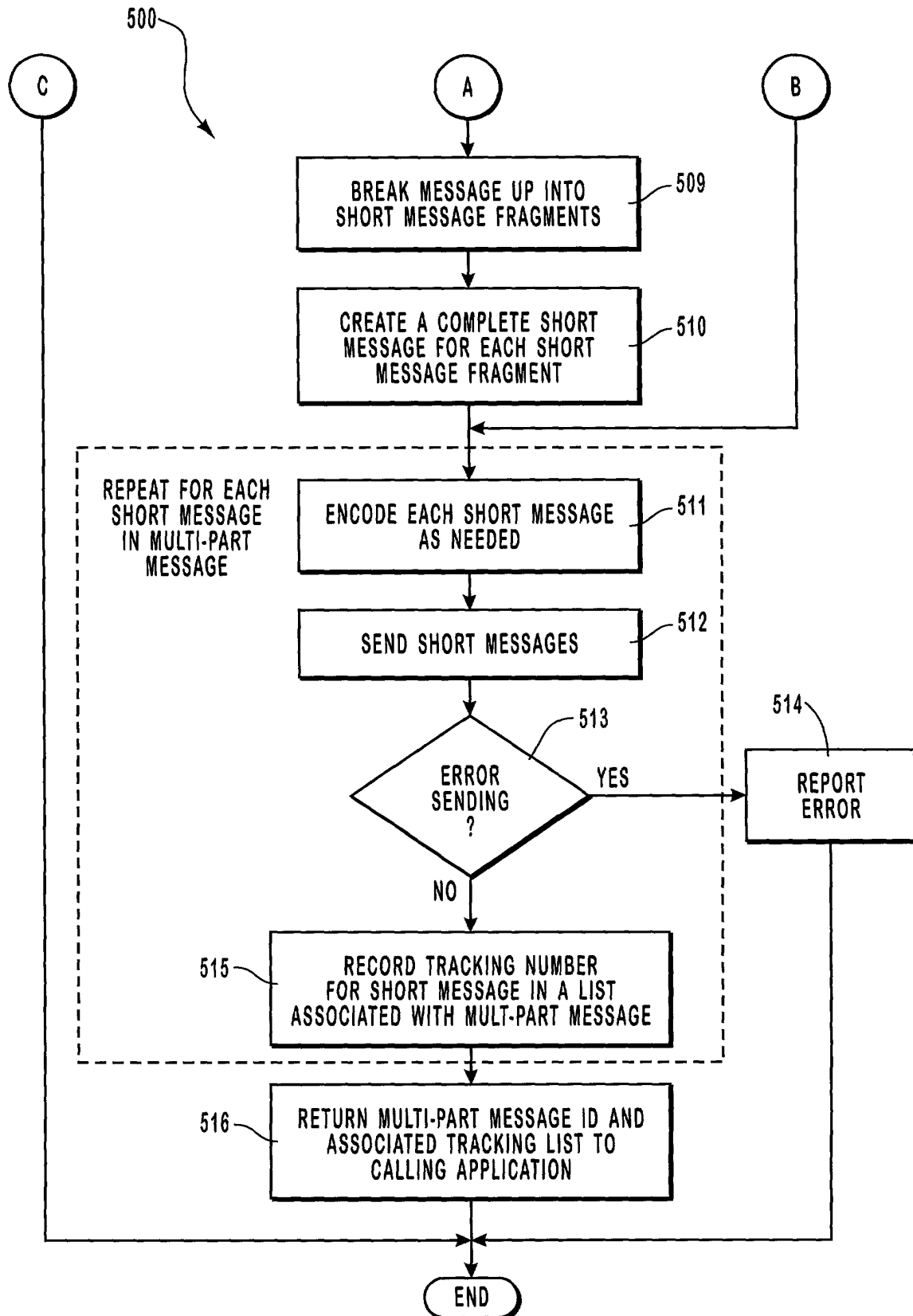
NO

C

A

B

FIG. 5A

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FIG. 5B

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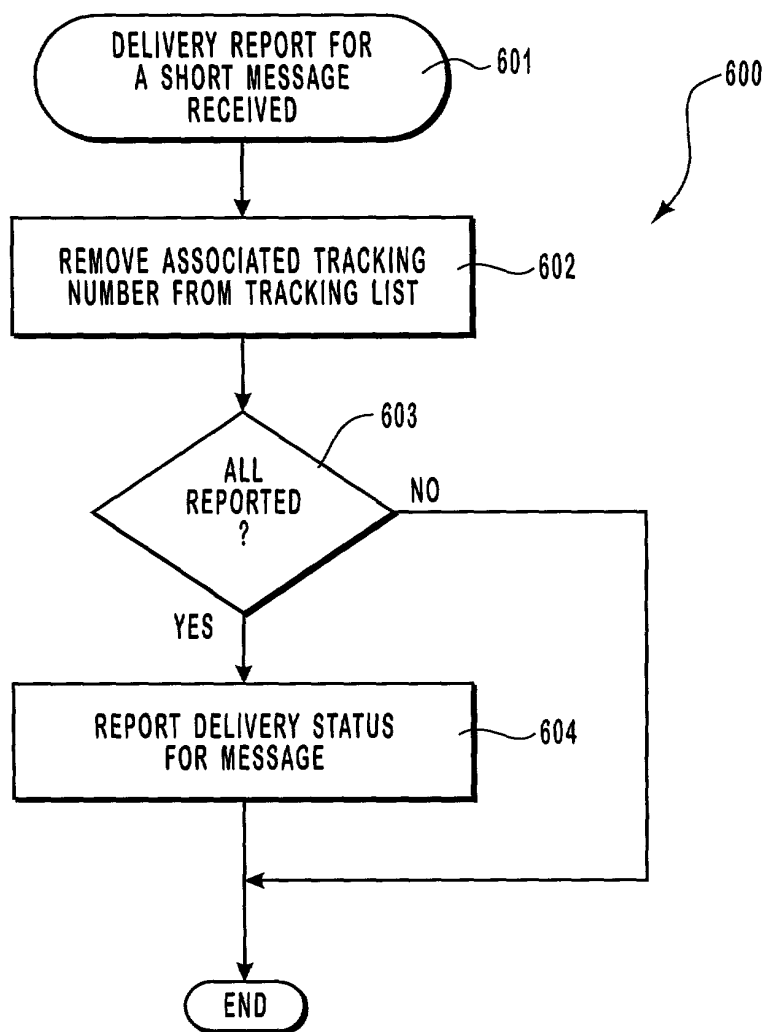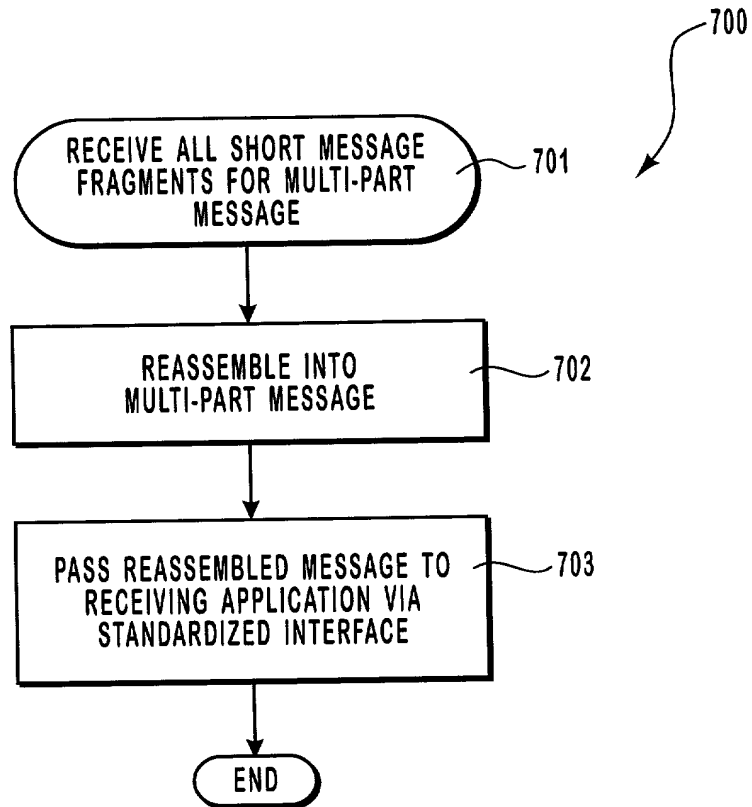Docket No.: 13768.218

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FIG. 6

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—700

RECEIVE ALL SHORT MESSAGE
FRAGMENTS FOR MULTI-PART
MESSAGE ⟍—701

REASSEMBLE INTO
MULTI-PART MESSAGE ⟍—702

PASS REASSEMBLED MESSAGE TO
RECEIVING APPLICATION VIA
STANDARDIZED INTERFACE ⟍—703

END

FIG. 7

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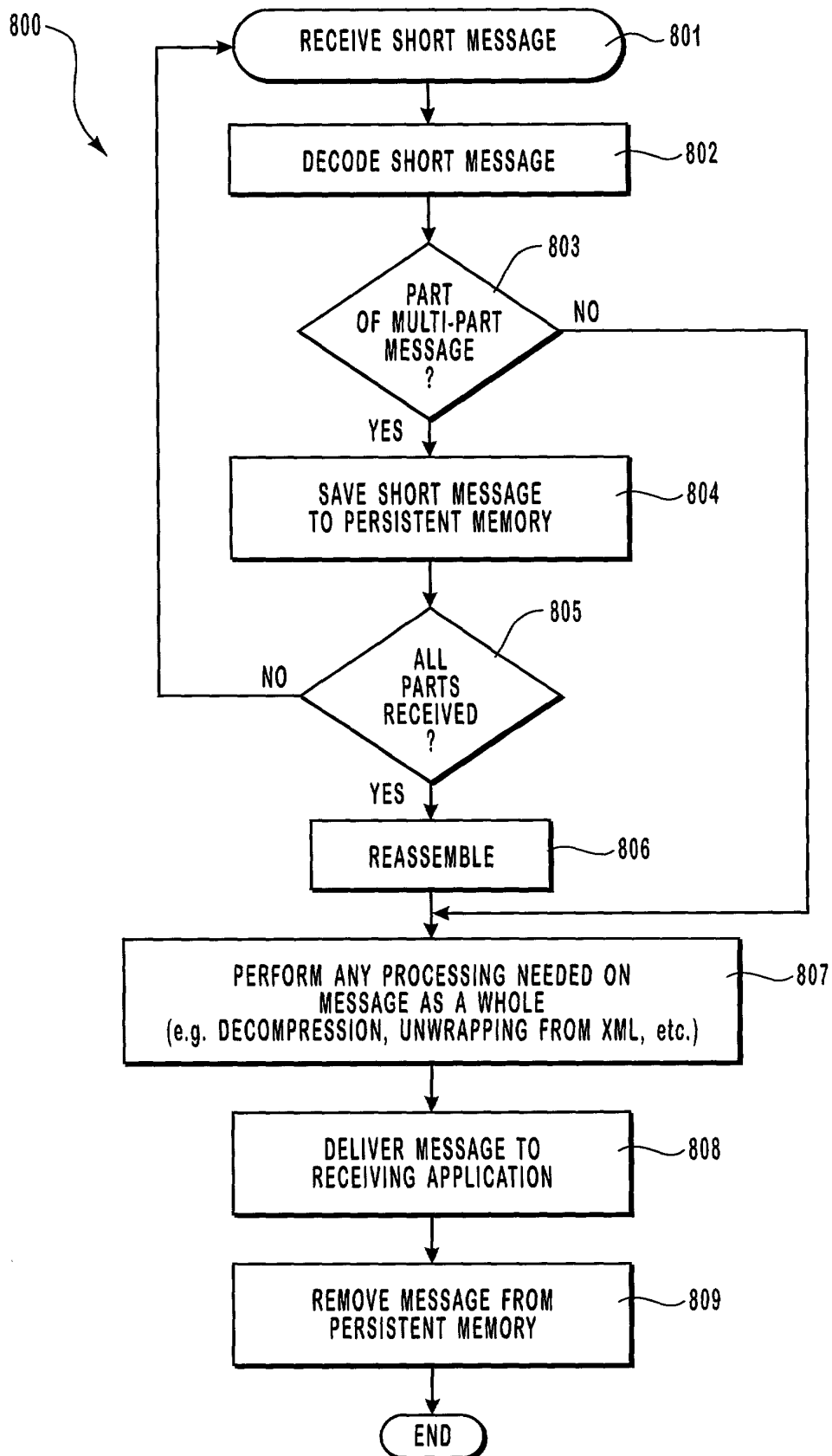Docket No.: 13768.218

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800

RECEIVE SHORT MESSAGE — 801

DECODE SHORT MESSAGE — 802

PART OF MULTI-PART MESSAGE ? — 803
NO
YES

SAVE SHORT MESSAGE TO PERSISTENT MEMORY — 804

ALL PARTS RECEIVED ? — 805
NO
YES

REASSEMBLE — 806

PERFORM ANY PROCESSING NEEDED ON MESSAGE AS A WHOLE (e.g. DECOMPRESSION, UNWRAPPING FROM XML, etc.) — 807

DELIVER MESSAGE TO RECEIVING APPLICATION — 808

REMOVE MESSAGE FROM PERSISTENT MEMORY — 809

END

FIG. 8

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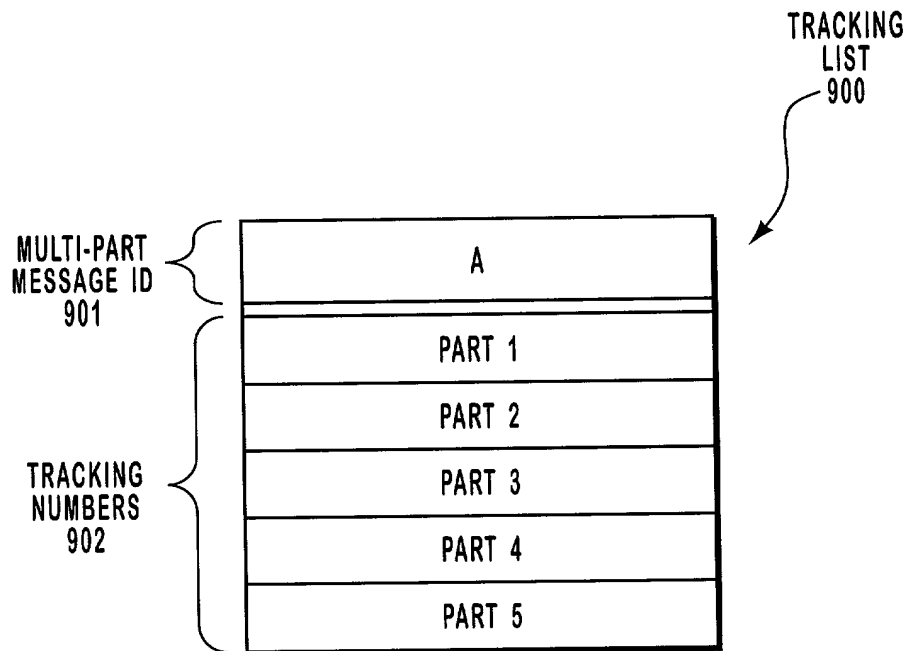Docket No.: 13768.218

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FIG. 9